

Claims

1. A robot device comprising:

an emotion module in which a plurality of emotion units representing various emotions affect one another to output an emotion; and

action means for acting on the basis of the emotion outputted by the emotion module.

2. The robot device as claimed in claim 1, further comprising a plurality of objects each being designed by an object-oriented design corresponding to the behavior of a living body,

wherein the emotion module outputs an emotion as the plurality of emotion units affect one another on the basis of information from the plurality of objects, and

the plurality of objects affect one another and affect the emotion from the emotion module so as to output the information.

3. The robot device as claimed in claim 1, wherein the emotion units are designed by an object-oriented design.

4. The robot device as claimed in claim 2, wherein the action means includes a plurality of objects each being designed by an object-oriented design corresponding to means for the behavior of the living body.

5. The robot device as claimed in claim 1, wherein the emotion module outputs information of an emotion unit having the highest emotion level as the emotion, of the

52
A1

plurality of emotion units having affected one another.

6. The robot device as claimed in claim 5, wherein the respective emotion units of the emotion module affect one another on the basis of external information.

7. The robot device as claimed in claim 5, wherein the respective emotion units of the emotion module affect one another with the lapse of time.

8. The robot device as claimed in claim 1, further comprising storage means for storing a plurality of parameters for controlling the state of emotion of each emotion unit,

wherein the emotion module controls the state of emotion of each emotion unit on the basis of each parameter stored in the storage means.

9. The robot device as claimed in claim 1, further comprising transmission/reception means for transmitting an emotion outputted by the emotion module and/or receiving an emotion from outside and for notifying the action means of the emotion.

10. The robot device as claimed in claim 9, wherein the robot device behaves in accordance with the emotion of another robot device received by the transmission/reception means.

11. The robot device as claimed in claim 10, wherein the emotion module changes the state of emotion of the emotion unit in accordance with the emotion of another robot device.

12. The robot device as claimed in claim 2, further comprising an instinct module

SJ
Rr

for outputting an instinct as a plurality of instinct units representing various instincts change their respective instinct levels,

wherein the emotion module and the instinct module operate independently while affecting the plurality of objects, and

the action means acts on the basis of the output from the emotion module and the instinct module.

13. A control method for a robot device comprising:

an emotion output step of outputting an emotion as a plurality of emotion units representing various emotions affect one another; and

an action control step of controlling the action of the robot device on the basis of the emotion outputted at the emotion output step.

14. The control method for a robot device as claimed in claim 13, wherein at the emotion output step, the plurality of emotion units affect one another to output an emotion on the basis of information from a plurality of objects each being designed by an object-oriented design corresponding to the behavior of a living body, and

the plurality of objects affect one another and affect the emotion from the emotion output step so as to output the information.

15. The control method for a robot device as claimed in claim 13, wherein the emotion units are designed by an object-oriented design.

16. The control method for a robot device as claimed in claim 13, wherein at the emotion output step, information of an emotion unit having the highest emotion level

SUB
AM

is outputted as the emotion, of the plurality of emotion units having affected one another.

17. The control method for a robot device as claimed in claim 16, wherein at the emotion output step, the respective emotion units of the emotion module affect one another on the basis of external information.

18. The control method for a robot device as claimed in claim 16, wherein at the emotion output step, the respective emotion units of the emotion module affect one another with the lapse of time.

19. The control method for a robot device as claimed in claim 13, wherein at the emotion output step, the state of emotion of each emotion unit is controlled on the basis of a parameter for controlling the state of emotion of each emotion unit.

20. The control method for a robot device as claimed in claim 13, wherein the emotion of another robot device outputted by said another robot device is received and a behavior corresponding to the emotion of said another robot device is taken.

21. The control method for a robot device as claimed in claim 20, wherein at the emotion output step, the state of emotion of the emotion unit is changed in response to the emotion of said another robot device.

22. The control method for a robot device as claimed in claim 14, further comprising an instinct output step of outputting an instinct as a plurality of instinct units representing various instincts change their respective instinct levels,

wherein at the emotion output step and the instinct output step, the emotion and

SUS
AN

the instinct are affected by the plurality of objects and are independently outputted, and

at the action control step, the action of the robot device is controlled on the basis of the emotion and the instinct outputted at the emotion output step and the instinct output step.

23. A program recording medium having recorded therein a program for carrying out:

an emotion output step of outputting an emotion as a plurality of emotion units representing various emotions affect one another; and

an action control step of controlling the action of the robot device on the basis of the emotion outputted at the emotion output step.

24. The program recording medium as claimed in claim 23, wherein at the emotion output step, the plurality of emotion units affect one another to output an emotion on the basis of information from a plurality of objects each being designed by an object-oriented design corresponding to the behavior of a living body, and

the plurality of objects affect one another and affect the emotion from the emotion output step so as to output the information.

25. The program recording medium as claimed in claim 23, wherein the emotion units are designed by an object-oriented design.

26. The program recording medium as claimed in claim 23, wherein at the emotion output step, information of an emotion unit having the highest emotion level is

DOCUMENT NO. 60252274

SUB
AS

outputted as the emotion, of the plurality of emotion units having affected one another.

27. The program recording medium as claimed in claim 26, wherein at the emotion output step, the respective emotion units of the emotion module affect one another on the basis of external information.

28. The program recording medium as claimed in claim 26, wherein at the emotion output step, the respective emotion units of the emotion module affect one another with the lapse of time.

29. The program recording medium as claimed in claim 23, wherein at the emotion output step, the state of emotion of each emotion unit is controlled on the basis of a parameter for controlling the state of emotion of each emotion unit.

30. The program recording medium as claimed in claim 23, wherein the emotion of another robot device outputted by said another robot device is received and a behavior corresponding to the emotion of said another robot device is taken.

31. The program recording medium as claimed in claim 30, wherein at the emotion output step, the state of emotion of the emotion unit is changed in response to the emotion of said another robot device.

32. The program recording medium as claimed in claim 24, further comprising an instinct output step of outputting an instinct as a plurality of instinct units representing various instincts change their respective instinct levels,

wherein at the emotion output step and the instinct output step, the emotion and the instinct are affected by the plurality of objects and are independently outputted,

and

at the action control step, the action of the robot device is controlled on the basis of the emotion and the instinct outputted at the emotion output step and the instinct output step.

33. A robot device comprising:

an instinct module in which a plurality of instinct units representing various instincts output individual instincts; and

action means for acting on the basis of the instinct outputted by the instinct module.

34. The robot device as claimed in claim 33, further comprising a plurality of objects each being designed by an object-oriented design corresponding to the behavior of a living body,

wherein the plurality of instinct units of the instinct module output an instinct on the basis of information from the plurality of objects, and

the plurality of objects affect one another and affect the instinct from the instinct module so as to output the information.

35. The robot device as claimed in claim 33, wherein the instinct units are designed by an object-oriented design.

36. The robot device as claimed in claim 34, wherein the action means includes a plurality of objects each being designed by an object-oriented design corresponding to means for the behavior of the living body.

37. The robot device as claimed in claim 33, wherein the instinct module outputs information of an instinct unit having the highest instinct level as the instinct.

38. The robot device as claimed in claim 37, wherein the instinct module outputs the instinct on the basis of external information.

39. The robot device as claimed in claim 37, wherein the respective instinct units of the instinct module output the instinct with the lapse of time.

40. The robot device as claimed in claim 33, further comprising storage means for storing a plurality of parameters for controlling the state of instinct of each instinct unit,

wherein the instinct module controls the state of instinct of each instinct unit on the basis of each parameter stored in the storage means.

41. The robot device as claimed in claim 33, further comprising transmission/reception means for transmitting an instinct outputted by the instinct module and/or receiving an instinct from outside and for notifying the action means of the instinct.

42. The robot device as claimed in claim 41, wherein the robot device behaves in accordance with the instinct of another robot device received by the transmission/reception means.

43. The robot device as claimed in claim 42, wherein the instinct module changes the state of instinct of the instinct unit in accordance with the instinct of another robot device.

NOVEMBER 2000

SUB
AS

44. The robot device as claimed in claim 34, further comprising an emotion module for outputting an emotion as a plurality of emotion units representing various emotions change their respective emotion levels,

wherein the instinct module and the emotion module operate independently while affecting the plurality of objects, and

the action means acts on the basis of the output from the instinct module and the emotion module.

45. A control method for a robot device comprising:

an instinct output step of outputting an instinct as a plurality of instinct units representing various instincts affect one another; and

an action control step of controlling the action of the robot device on the basis of the instinct outputted at the instinct output step.

46. The control method for a robot device as claimed in claim 45, wherein at the instinct output step, the plurality of instinct units output an instinct on the basis of information from a plurality of objects each being designed by an object-oriented design corresponding to the behavior of a living body, and

the plurality of objects affect one another and affect the instinct from the instinct output step so as to output the information.

47. The control method for a robot device as claimed in claim 45, wherein the instinct units are designed by an object-oriented design.

48. The control method for a robot device as claimed in claim 45, wherein at the

instinct output step, information of an instinct unit having the highest instinct level is outputted as the instinct.

49. The control method for a robot device as claimed in claim 48, wherein at the instinct output step, an instinct is outputted on the basis of external information.

50. The control method for a robot device as claimed in claim 48, wherein at the instinct output step, the respective instinct units output an instinct with the lapse of time.

51. The control method for a robot device as claimed in claim 45, wherein at the instinct output step, the state of instinct of each instinct unit is controlled on the basis of a parameter for controlling the state of instinct of each instinct unit.

52. The control method for a robot device as claimed in claim 45, wherein the instinct of another robot device outputted by said another robot device is received and a behavior corresponding to the instinct of said another robot device is taken.

53. The control method for a robot device as claimed in claim 52, wherein at the instinct output step, the state of instinct of the instinct unit is changed in response to the instinct of said another robot device.

54. The control method for a robot device as claimed in claim 46, further comprising an emotion output step of outputting an emotion as a plurality of emotion units representing various emotions change their respective emotion levels,

wherein at the instinct output step and the emotion output step, the instinct and the emotion are affected by the plurality of objects and are independently outputted,

SEARCHED
INDEXED
SERIALIZED
FILED

SJ
AA

and

at the action control step, the action of the robot device is controlled on the basis of the instinct and the emotion outputted at the instinct output step and the emotion output step.

55. A program recording medium having recorded therein a program for carrying out:

an instinct output step of outputting an instinct as a plurality of instinct units representing various instincts affect one another; and

an action control step of controlling the action of the robot device on the basis of the instinct outputted at the instinct output step.

56. The program recording medium as claimed in claim 55, wherein at the instinct output step, the plurality of instinct units output an instinct on the basis of information from a plurality of objects each being designed by an object-oriented design corresponding to the behavior of a living body, and

the plurality of objects affect one another and affect the instinct from the instinct output step so as to output the information.

57. The program recording medium as claimed in claim 55, wherein the instinct units are designed by an object-oriented design.

58. The program recording medium as claimed in claim 55, wherein at the instinct output step, information of an instinct unit having the highest instinct level is outputted as the instinct.

00247154

59. The program recording medium as claimed in claim 58, wherein at the instinct output step, an instinct is outputted on the basis of external information.

60. The program recording medium as claimed in claim 58, wherein at the instinct output step, the respective instinct units output an instinct with the lapse of time.

61. The program recording medium as claimed in claim 55, wherein at the instinct output step, the state of instinct of each instinct unit is controlled on the basis of a parameter for controlling the state of instinct of each instinct unit.

62. The program recording medium as claimed in claim 55, wherein the instinct of another robot device outputted by said another robot device is received and a behavior corresponding to the instinct of said another robot device is taken.

63. The program recording medium as claimed in claim 62, wherein at the instinct output step, the state of instinct of the instinct unit is changed in response to the instinct of said another robot device.

64. The program recording ~~medium~~ as claimed in claim 56, further comprising an emotion output step of outputting an emotion as a plurality of emotion units representing various emotions change their respective emotion levels,

wherein at the instinct output step and the emotion output step, the instinct and the emotion are affected by the plurality of objects and are independently outputted, and

at the action control step, the action of the robot device is controlled on the basis of the instinct and the emotion outputted at the instinct output step and the emotion

~~output step.~~

65. A robot device comprising:

an emotion module in which a plurality of emotion units representing emotions output individual emotions;

an instinct module in which a plurality of instinct units representing instincts output individual instincts; and

action means for acting on the basis of the emotion outputted by the emotion module and the instinct outputted by the instinct module.

66. The robot device as claimed in claim 65, wherein the emotion units are affected by an instinct outputted by the instinct module, and

the instinct units are affected by an emotion outputted by the emotion module.

67. The robot device as claimed in claim 65, wherein the plurality of emotion units affect one another to output an emotion.

68. The robot device as claimed in claim 65, further comprising a plurality of objects designed by an object-oriented design corresponding to the behavior of a living body,

wherein the emotion module outputs an emotion on the basis of information from the plurality of objects,

the instinct module outputs an instinct on the basis of information from the plurality of objects,

the plurality of objects affect one another and affect the emotion from the

DRAFTED BY DRAFTING TEAM

emotion module and the instinct from the instinct module so as to output the information.

69. The robot device as claimed in claim 65, wherein the emotion units and the instinct units are designated by an object-oriented design.

70. The robot device as claimed in claim 66, wherein the action means includes a plurality of objects each being designated by an object-oriented design corresponding to means for the behavior of a living body.

71. The robot device as claimed in claim 65, wherein the emotion module outputs information of an emotion unit having a high emotion level as the emotion, and the instinct module outputs information of an instinct unit having a high instinct level as the instinct.

72. A control method for a robot device comprising:

an emotion output step of outputting individual emotions by a plurality of emotion units representing emotions;

an instinct output step of outputting individual instincts by a plurality of instinct units representing instincts; and

an action control step of controlling the action of the robot device on the basis of the emotion outputted at the emotion output step and the instinct outputted at the instinct output step.

73. The control method for a robot device as claimed in claim 72, wherein the emotion units are affected by an instinct outputted at the instinct output step, and

the instinct units are affected by an emotion outputted at the emotion output step.

74. The control method for a robot device as claimed in claim 72, wherein the plurality of emotion units affect one another to output an emotion.

75. The control method for a robot device as claimed in claim 72, wherein at the emotion output step, an emotion is outputted on the basis of information from a plurality of objects each being designated by an object-oriented design corresponding to the behavior of a living body, and

at the instinct output step, an instinct is outputted on the basis of information from a plurality of objects each being designated by an object-oriented design corresponding to the behavior of a living body,

the plurality of objects affecting one another and affecting the emotion from the emotion module and the instinct from the instinct module so as to output the information.

76. The control method for a robot device as claimed in claim 72, wherein the emotion units and the instinct units are designated by an object-oriented design.

77. The control method for a robot device as claimed in claim 72, wherein at the emotion output step, information of an emotion unit having a high emotion level is outputted as the emotion, and

at the instinct output step, information of an instinct unit having a high instinct level is outputted as the instinct.

SEARCHED
INDEXED
COPIED
FILED

SJ
AIM

78. A program recording medium having recorded therein a program for carrying out:

an emotion output step of outputting individual emotions by a plurality of emotion units representing emotions;

an instinct output step of outputting individual instincts by a plurality of instinct units representing instincts; and

an action control step of controlling the action of the robot device on the basis of the emotion outputted at the emotion output step and the instinct outputted at the instinct output step.

79. The program recording medium as claimed in claim 78, wherein the emotion units are affected by an instinct outputted at the instinct output step, and

the instinct units are affected by an emotion outputted at the emotion output step.

80. The program recording medium as claimed in claim 78, wherein the plurality of emotion units affect one another to output an emotion.

81. The program recording medium as claimed in claim 79, wherein at the emotion output step, an emotion is outputted on the basis of information from a plurality of objects each being designated by an object-oriented design corresponding to the behavior of a living body, and

at the instinct output step, an instinct is outputted on the basis of information from a plurality of objects each being designated by an object-oriented design

DOCUMENT

corresponding to the behavior of a living body,

the plurality of objects affecting one another and affecting the emotion from the emotion module and the instinct from the instinct module so as to output the information.

82. The program recording medium as claimed in claim 78, wherein the emotion units and the instinct units are designated by an object-oriented design.

83. The program recording medium as claimed in claim 78, wherein at the emotion output step, information of an emotion unit having a high emotion level is outputted as the emotion, and

at the instinct output step, information of an instinct unit having a high instinct level is outputted as the instinct.

84. A robot device comprising:

detection means for detecting a stimulus applied from outside;

storage means for storing the record of information related to the stimulus;

response processing decision means for deciding response processing on the basis of the stimulus detected by the detection means; and

response execution means for executing the response processing decided by the response processing decision means;

the response processing decision means deciding the response processing on the basis of the record information stored in the storage means.

85. The robot device as claimed in claim 84, wherein the response processing

SUB
AUG

09/01/2017
EPO
DOVER

decision means is an emotion module for deciding an emotion in response to an emotion level, which is the record information, changing in response to the stimulus due to an emotion, and

the response execution means takes a behavior and/or an action for expressing the emotion decided by the emotion module.

86. The robot device as claimed in claim 84, wherein the response processing decision means is an instinct module for deciding an instinct in response to an instinct level, which is the record information, changing in response to the stimulus due to an instinct, and

the response execution means takes a behavior and/or an action for expressing the instinct decided by the instinct module.

87. A control method for robot device comprising:
a detection step of detecting a stimulus applied to the robot device from outside;
a response processing decision step of deciding response processing of the robot device on the basis of the stimulus detected at the detection step; and
a response execution step of causing the robot device to execute the response processing decided at the response processing decision step;

wherein at the response processing decision step, the response processing is decided on the basis of the record information stored in storage means.

88. The control method for a robot device as claimed in claim 87, wherein the response processing decision means is an emotion module for deciding an emotion in

SEARCHED
INDEXED
COPIED
SERIALIZED
FILED
APR 15 1988

response to an emotion level, which is the record information, changing in response to the stimulus due to an emotion, and

the response execution means causes the robot device to take a behavior and/or an action for expressing the emotion decided by the emotion module.

89. The control method for a robot device as claimed in claim 87, wherein the response processing decision means is an instinct module for deciding an instinct in response to an instinct level, which is the record information, changing in response to the stimulus due to an instinct, and

the response execution means causes the robot device to take a behavior and/or an action for expressing the instinct decided by the instinct module.

90. A program recording medium having recorded therein a program for carrying out:

a detection step of detecting a stimulus applied to a robot device from outside; a response processing decision step of deciding response processing of the robot device on the basis of the stimulus detected at the detection step; and

a response execution step of causing the robot device to execute the response processing decided at the response processing decision step;

wherein at the response processing decision step, the response processing is decided on the basis of the record information stored in storage means.

91. The program recording medium as claimed in claim 90, wherein the response processing decision means is an emotion module for deciding an emotion in response

to an emotion level, which is the record information, changing in response to the stimulus due to an emotion, and

the response execution means causes the robot device to take a behavior and/or an action for expressing the emotion decided by the emotion module.

92. The program recording medium as claimed in claim 90, wherein the response processing decision means is an instinct module for deciding an instinct in response to an instinct level, which is the record information, changing in response to the stimulus due to an instinct, and

the response execution means causes the robot device to take a behavior and/or an action for expressing the instinct decided by the instinct module.

00000
01234
00000
Add
52
00000